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ABSTRACT

Currently available measures of self-efficacy described in educational and psychological research literature were cataloged and reviewed after a literature search. To identify and locate these measures, searches of "Psychological Abstracts" and the ERIC system were conducted using self-efficacy and related keywords. Results of the searches, summarized in Table 1, revealed over 1,400 articles related to self-efficacy since 1966, of which 363 mentioned the measurement of self-efficacy. All but 22 of these articles were examined to identify 90 self-efficacy measures. These are arranged according to content domain in Table 2. Table 3 contains the frequency and percentage of surveyed instruments in each domain. Taken as a whole, the study reveals several shortcomings in many existing measures of self-efficacy, including the use of potentially inappropriate scale formats, inadequate normative data, and limited evidence of test reliability and validity. Instruments for which the most compelling evidence of reliability and validity are identified are listed in Table 2. These may be suitable models or starting points for construction of new instruments. Table 4 presents information about item/scale characteristics, individuals sampled, reliability, and validity. There are 102 references. (SLD)

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Measuring Self-Efficacy: The State of the Art

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Summary for Roundtable

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Background

Bandura (1977, 1986) has proposed a theoretical framework to help explain and predict human behavior. He suggests that behavior in most situations is mediated by "self-efficacy" expectations (i.e., beliefs about one's capacities to successfully perform a given task or behavior). According to Bandura, self-efficacy expectations affect the extent to which individuals will attempt coping behaviors, how much effort they will expend, and how long they will persist in the face of obstacles and adverse experiences (1977, p.194).

Much of the early research concerning self-efficacy theory centered on clinical problems such as phobias (e.g., Bandura, Adams, Hardy, & Howells, 1980). Studies along these lines have shown that changes in self-efficacy are associated with changes in behavior and that self-efficacy predicts the outcome of therapy. More recently, self-efficacy theory has been investigated as an important influence on behavior in a wide range of additional domains including weight loss (e.g., Edell, Edington, Herd, O'Brien, & Witkin, 1987), smoking cessation maintenance (e.g., Colietti, Supnick, & Payne, 1985), social interactions (e.g., Fichten, Bourdon, Amsel, & Fox, 1987), athletics (e.g., Ryckman, Robbins, Thornton, & Cantrell, 1982), teaching performance (e.g., Gibson & Dembo, 1984), academic achievement (e.g., Schunk, 1987), career decision-making (e.g., Taylor, & Betz, 1983), child-rearing skills (e.g., Froman, 1986), and job-related skills (Lee, & Gillen, 1989). In general, findings from research across domains support the explanatory and predictive power of self-efficacy theory.

To accurately assess the utility of self-efficacy theory, reliable and valid measures of self-efficacy are essential. Developing such measures, however, is difficult because self-efficacy is highly context or situation

dependent. For example, one may have high self-efficacy for writing an effective essay, but low self-efficacy for delivering an effective speech. No single standardized measure of self-efficacy will be appropriate for all studies and researchers may need to develop new or significantly revised measures in each investigation. As a result, sound instrument construction procedures are particularly important and investigators are responsible for providing compelling evidence to support the reliability and validity of the self-efficacy measures they develop.

Purpose of the Study

The purpose of this paper was to catalog and review currently available measures of self-efficacy described in the educational and psychological research literature. Such a review should provide useful information to investigators who plan to use existing self-efficacy measures or to develop new ones.

Results

To identify and locate measures of self-efficacy, "ERIC" and "Psychological Abstract" computerized literature searches were conducted using "self-efficacy" and "measure/inventory/scale/questionnaire/test/survey" as sets of keywords. Although this strategy did not ensure the identification of all existing measures of self-efficacy, it was expected to yield a representative set of measures. The results of the computer searches are given in Table 1. "ERIC" and "Psychological Abstract" searches dated back to 1966 and 1974, respectively. Both of these dates were well before the publication of Bandura's classic 1977 article that outlined the essential components of self-efficacy theory. As evident from Table 1, there have been over 1,400 articles related to self-efficacy since 1966 and the measurement of self-efficacy is mentioned in 363 of them. The present investigators were able to locate all but 22 of these articles. The

remaining articles contained information about 90 different self-efficacy measures. These measures are identified and arranged according to content domain in Table 2. The reader may review this table to find available instruments in content areas of interest. The frequency and percentage of surveyed instruments within each content domain is given in Table 3. As can be seen from Table 3, the majority of surveyed instruments are for school-related (41.1%) and health-related (20.0) content domains. The information obtained for the surveyed measures in four broad areas--(1) item/scale characteristics, (2) individuals sampled, (3) reliability evidence, and (4) validity evidence--is provided in Table 4.

Item/Scale Characteristics: Consistent with the response format used in Bandura's original instrument for "snake phobia," most (68.9%) of the reviewed measures include a confidence or certainty continuum. However, a wide variety of other formats also have been employed. Given Bandura's original definition of self-efficacy, it is unclear whether these alternative formats are appropriate for assessing self-efficacy. Unfortunately, no prior research has examined the effects of response format on the validity of results yielded by self-efficacy instruments.

Besides using a confidence/certainty continuum, most self-efficacy instruments (62.2%) measure only one dimension of self-efficacy, namely strength. Only 4.4% of the surveyed instruments assessed all three components of self-efficacy (strength, level, and generality) originally proposed by Bandura. Generality of self-efficacy, although important, has been especially neglected. This neglect may be due to several reasons. First, the meaning of generality is somewhat ambiguous. Second, it is difficult to come up with ways of assessing generality. Finally, comprehensive assessment of generality would require a much larger scope

validity study. It also should be emphasized that when correlations between level and strength scales are reported, they are never lower than .90. Consequently, there appears to be little utility in having separate scales for strength and level for the presently reviewed measures. Much of this problem occurs because these scales, as currently defined, are not independent.

Outcome expectancy, like generality, is seldom measured. This is not surprising since outcome expectancy is not a separate dimension of self-efficacy. However the inclusion of such a scale could provide useful information in assessing the validity of the other scale dimensions.

Individuals Sampled: The majority of research studies on measures of self-efficacy have been based on small samples (150 or less) of college students and adults. No self-efficacy instrument has been adequately normed. While convenience and availability are undoubtedly largely responsible for these results, appropriate uses of existing self-efficacy measures are limited. The present data suggest that, unless local norms and corresponding validity evidence are available, currently available self-efficacy instruments should be used for research purposes only.

Reliability Evidence: Evidence supporting the reliability of the sampled measures is very limited. In fact, no reliability data were reported for 61.1% of the surveyed instruments. When reliability data were given, they were generally those that are easiest to obtain and compute (i.e., Coefficient Alphas) rather than those that might provide the most compelling and appropriate evidence of score consistency (e.g., equivalent forms, test-retest). Nevertheless, median reliability coefficients were reasonably high, falling in the range of .81 and above in 94.2% of the reported cases.

Validity Evidence: Since construct validity evidence is essential for measures purported to assess self-efficacy, one might anticipate that a wide variety of information would be reported to support the theoretical foundation guiding the construction of each instrument. However, as was the case with normative and reliability data, validity data for the surveyed instruments was very limited. Although some description of scale development was provided for 51.1% of the measures, in most cases there was no mention of the use of test specifications to guide scale development, review of items by content experts, or prepiloting and revision of items. The most common sources of construct validity evidence were correlations with other measures and reported group differences. However, these data usually were reported in studies to answer particular research questions using the given instruments rather than to validate the instruments themselves. In other words, the validity of these measures often was assumed rather than systematically evaluated. More rigorous methods of addressing construct validity such as multitrait-multimethod matrix analyses and factor analysis were employed in relatively few cases (i.e., 3.3% and 21.1%, respectively). A "microanalysis" (Bandura's term for evaluating the relationship been responses to a self-efficacy instrument and the actual behaviors described by the items) was reported for only 4 out of the 90 measures surveyed (4.4%).

Summary and Conclusions

Taken as a whole, the present study points out a number of shortcomings in many existing measures of self-efficacy including the use of potentially inappropriate scale formats, inadequate normative data, and limited evidence of test score reliability and validity. The instruments for which the present authors found the most compelling evidence of reliability and validity are identified in Table 2 and may provide suitable models or

starting points to guide the construction of new instruments. We caution the reader that additional data describing the construction, norming, reliability, and validity of many of the surveyed instruments may exist that were not available to us. We recommend that readers contact the authors of specific instruments directly for further information.

TABLE 1

Number of Articles Related to Self-Efficacy Obtained From ERIC and Psychological Abstract Searches*

Period	Number of Articles by Keywords	
	Self-Efficacy	Self-Efficacy & Measurement-Related Terms
ERIC		
1966-1975	2	1
1976-1982	29	1
1983-1989	212	26
1966-1989	243	28
Psychological Abstracts		
1974-1982	594	48
1983-1989	588	287
1974-1989	1182	315
Combined Searches	1425	363

* Searches completed in January of 1990.

TABLE 2

Self-Efficacy Measures by Content Domain and Source

Name of Measure		Reference Source	
	Domain 1: Psychological/Clinical		
1.	The Self-Efficacy Questionnaire (snake phobia; 29 items)	Bandura, Adams, Hardy, & Howells, 1980	*
2.	The Self-Efficacy Questionnaire (snake phobia; 20 items)	Gauthier & Ladouceur, 1981; Bandura, 1977	+
3.	The Self-Efficacy Questionnaire (snake phobia; 18 items)	Kirsch, Tennen, Wickless, Saccone, & Cody, 1983; Bandura, 1977	
4.	I. D. (snake phobia)	Lee, 1984	
5.	I. D. (acrophobia)	William, & Watson, 1985	
6.	I. D. (acrophobia; 18 items)	Bourgue, 1980	
7.	I. D. (acrophobia)	Bandura et al., 1980	
8.	The Dental Anxiety Scale	Kent, 1987a, 1987b	
	Domain 2: Social Interactions		
1.	Academic Social Self-Efficacy Scale (Social interaction and problem solving)	Gresham, Evans, & Elliot, 1988	*
2.	I. D. (Romantic, social skills, assertiveness, athletic & other activities)	Davis, 1985	
3.	I. D. (Heterosexual situations)	Barrios, 1983	
4.	The Coping Confidence Scale (Marital separation)	Marcus, & Forster, 1988	
5.	The Sexual Self Efficacy Scale (25 items)	Libman, Rothenbert, Fichten, & Amsel, 1985	+
6.	Interpersonal Self Efficacy Scale (6 items)	Castles, & Glass, 1986	
7.	I. D. (Mood & self efficacy; 45 items, 15 for each of three forms)	Kavanaugh, & Bower, 1985	+
8.	I. D. (Self presentation; 10 items)	Maddux, Norton, & Leary, 1988	

9.	The Self Efficacy Questionnaire For Social Skills (25 items)	Moe, & Zeiss, 1982	* +
10.	Children's Self Efficacy For Peer Interaction Scale (22 items)	Wheeler, & Ladd, 1982	*
11.	Self Efficacy Scale & Physical Self Efficacy Scale (Also measures social and general self efficacy)	Davis-Berman, 1988, Sherer, & Adams, 1983	
12.	The Psychosocial Competence Incomplete Stories Test (15 items)	Mandell, 1981	
	Domain 3: Psychomotor Skills		
1.	I. D. (muscular endurance tasks; 10 items)	Weinberg, Gould, Yukelson, & Jackson, 1981	
2.	The Physical Self-Efficacy Scale (physical/self presentation skills; 20/22 items)	Ryckman, Robbins, Thornton, & Cantrell, 1982; McAuley & Gill, 1983	* +
3.	I. D. (motor skills)	Kaley, & Cloutier, 1984	
4.	I. D. (tennis performance)	Barling, & Abel, 1983	
5.	Self Efficacy Scale and Physical Self-Efficacy Scale (also measures) social and general self-efficacy)	Davis-Berman, 1988; Sherer, & Adams, 1983	
6.	Self-Efficacy for Exercise Behavior Scales	Sallis, Pinski, Grossman, Patterson, & Nader, 1988	*
	Domain 4: School-Related Skills		
	A. <u>Mathematics/Calculus/Algebra/Anagrams</u>		
1.	The Self Efficacy/Interest Rating	Cambell, & Hackett, 1981	
2.	I. D. (Math problem solving; 20 items)	Solomon, 1988	
3.	The Mathematics Self Efficacy Scale (52 items)	Betz, & Hackett, (1983)	*
4.	I. D. (Math; 5 items)	Norwich, (1981)	
5.	Math Learning Scale (Calculus; 25 items)	Henderson, & Landesman, 1986	+
6.	I. D. (Algebra)	Schimmel, 1988	

7.	I. D. (Anagrams)	Minor, & Roberts, 1984	
8.	I. D. (Anagrams)	Davis, 1982	
9.	I. D. (Math; 18 items)	Schunk, 1981	
	B. Reading/Writing		
10.	I. D. (Reading)	Shell, Murphy, & Bruning, 1989	* +
11.	I. D. (Writing)	Shell, Murphy, & Bruning, 1989	*
12.	I. D. (Reading)	Lachman, Jelalian, 1984	
13.	I. D. (Writing performance)	Meier, 1984	
14.	I. D. (Reading; 40 items)	Schunk, & Rice, 1986	*
15.	I. D. (Reading comprehension; 20 items)	Schunk, & Rice, 1984	*
	C. General School Work		
16.	Academic Social Self Efficacy Scale (Solving problems and social interactions)	Gresham, Evan, & Elliott ,1986	*
17.	I. D. (Learning strategies--class concentration, memorization, exam concentration, etc.; 29 items)	Wood, & Locke, 1987	*
18.	College Academic Self Efficacy Scale (Social situations, cognitive operations, and technical skills)	Owen, 1988	*
19.	I.D. (academic achievement and persistence in science and engineering)	Lent, Brown, & Larkin, 1984; 1987	*
20.	Self Efficacy Scale For Young Children (Academic school learning activities)	Lachman, & Selalian, 1984	*
21.	Children's Self Efficacy Beliefs Scale (Academic and teacher efficacy)	Barling, 1981	
22.	Academic Self Efficacy Scale (Research, teaching, administration)	Schoen, & Winolew, 1988	* +
23.	I. D. (Memory monitoring skills)	Wang, & Richards, 1987	

24.	I. D. (Creative productivity)	Author unknown	
25.	The Perceived Self Efficacy Scale (Learning to solve problems)	Solomon, 1988	
26.	The Student Self-Efficacy Instrument	Hillman, 1986	+
	D. Teacher/Principal Efficacy		
27.	I. D. (Teaching)	Barling, 1981	+
28.	Teacher Efficacy Scale (Teacher effectiveness & school effectiveness; 30 items)	Tracy, & Gibson, 1986; Gibson, & Dembo, 1984	+
29.	Teacher Efficacy Scale (24 items)	Saklofske, Michayluk, & Randhawa, 1988	
30.	The Teacher Self-Efficacy Instrument	Hillman, 1986	* +
31.	The Principal Self-Efficacy Instrument	Hillman, 1986	* +
32.	Self-Efficacy Scale for Conducting Therapy for Stuttering Adults and Children	Rudolf, Manning, & Sewell, 1983	
	E. Computer-Related Skills		
33.	The Computer Self-Efficacy Questionnaire (programming, etc.)	Miura, 1986; 1987	*
34.	I. D. (computer use)	Jordon-Blecom, 1988	
	F. Completing/Finishing School		
35.	I. D. (graduation transition)	Jason, 1983	
	G. Arts-Related		
36.	Self-Efficacy Scale for Children (painting; 26 items)	Stechtnitz, 1986	*
	Domain 5: Health-Related Areas		
	A. Pain Control/Control of Anxiety		
1.	I. D. (Handling of daily hassles and life events)	Holahan, & Holahan, 1987	
2.	I. D. (Recovery from chronic pain)	Dolce, 1986	

B. Smoking

3.	The Smoking Self-Efficacy Questionnaire (17 items)	Colletti, Supnick, & Payne, 1985	*
4.	I. D. (31 items)	Di Clemente, Piechaska, & Gilbertini, 1985	
5.	I. D.	Godding, & Glasgow, 1985	
6.	The Smoking Confidence Questionnaire (46 items)	Condiotte, Lichtenstein, 1981	
7.	A Self-Efficacy Questionnaire (Smoking cessation maintenance; 12 items)	DiClemente, 1981	* +
8.	I. D. (Smoking cessation; 17 items)	Brod, & Hall, 1984	
9.	I. D. (Smoking relapse; a modified version of questionnaire developed by Condiotte & Lichtenstein; 14 items)	Yates, & Thain, 1984; 1985	+
10.	I. D. (Smoking behaviors in young adults; 50 items)	Lawrence, & Robinson, 1986	
11.	I. D. (9 items)	deVries, Dykstra, & Kuhlman, 1988	+

C. Eating/Weight control

12.	I. D. (Weight loss)	Edell, Edington, Herd, O' Brien & Witkin, 1987	
13.	I. D. (Weight control)	Mitchell, et al., 1984	
14.	Eating Self-Efficacy Scale (Overeating; 25 items)	Glynn, & Rudeman, 1986	* +
15.	Eating Disorders Self-Efficacy Scale	Wagner, Halmi, & Maguire, 1987	+

D. Acne Treatment Maintenance

16.	I.D. (Acne Treatment Maintenance)	Flanders, & McNamara, 1984	

E. Arthritis/Asthma

17.	The Arthritis Self-Efficacy Scale	O'Leary, Shoov, Lorig, & Hebinan, 1988	
18.	Asthma Self-Efficacy Scale	Snyder, Winder, & Crew, 1987	

Domain 6: Infant Care/ Parenting

1.	I. D. (parenting self-efficacy)	Cutrona, & Troutman, 1986	
2.	Infant Care Self-Efficacy Scale	Froman, 1986	* +
3.	The Toddler Care Questionnaire	Gross, Rucissano, & Roncoti, 1989	

Domain 7: Career Decisions

1.	The Vocational Decision Scale (career choice; 38 items)	O'Hare, & Beutell, 1987	
2.	The Occupational Self-Efficacy Scale	Betz, & Hackett, 1981	
3.	The Career-Decision Making Self-Efficacy Scale	Taylor, & Betz, 1983	* +

Domain 8: Military Skills

1.	I. D. (Functioning in battle)	Solomon, 1988	

Domain 9: Job-Related Skills

1.	I. D. (sales performance)	Lee, C, & Gillen, 1989	

Domain 10: Generalized Self-Efficacy

1.	The Self-Efficacy Scale (Generalized Social Skills and Vocational Confidences; 30 items)	Sherer, & Maddux, 1982	* +
2.	The Generalized Self-Efficacy Scale (Faith in Self; 35 items)	Tipton, & Worthington, 1984	

* These sources provided the most detailed information about scale development and validation.

+ These sources provide the actual test items.

TABLE 3

Frequency and Percentage of Surveyed Self-Efficacy Measures By Content Domain

Content Domain	Frequency	Percentage
1. Psychological/Clinical	8	8.9
a) Snake Phobia	4	4.4
b) Acrophobia	3	3.3
c) Dental Anxiety	1	1.1
2. Social/Romantic/ Sexual Interactions	12	13.3
3. Psychomotor Skills	6	6.7
4. School-Related	36	41.1
a) Reading	4	4.4
b) Writing	2	2.2
c) General School Work	10	11.1
d) Creativity	1	1.1
e) Teacher Efficacy	6	6.7
f) Computer Skills	2	2.2
g) Math	8	7.7
h) Anagram	2	2.2
i) Painting Skills	1	1.1
5. Health-Related	18	20.0
a) Pain/Illness Recovery	2	2.2
b) Smoking	9	10.0
c) Weight Loss/Diet	4	4.4
d) Acne Treatment Maintenance	1	1.1
e) Arthritis/Asthma	2	2.2
6. Infant Care/Parenting	3	3.3
7. Career Choice	3	3.3
8. Military Skills	1	1.1
9. Job Related	1	1.1
10. Generalized Self-Effiacy	2	2.2
TOTAL	90	100.0

TABLE 4

Information Obtained About Self-Efficacy Measures in Three Broad Areas

Characteristic/Information Provided	Frequency	Percentage
Area 1: Item/Scale Characteristics		
A. Response Scale		
1. Confidence/Certainty Continua (e.g., completely unsure-completely sure, no confidence-complete confidence). Scales vary from 3 to 11 points	62	68.9
2. Likert (Agree-Disagree) Continua. Scales vary from 5 to 7 points	14	15.5
3. Control Continua (e.g., cannot control-can control). Scales vary from 10 to 11 points	2	2.2
4. Task Difficulty Continua (e.g., easy-hard)	2	2.2
5. Comfort Continua (e.g., very uncomfortable to very comfortable).	2	2.2
6. Frequency-Related Continua (e.g., never-very often).	5	5.6
7. Forced-Choice	1	1.1
8. Opened-Ended	2	2.2
B. Self-Efficacy Dimensions Assessed		
1. Strength	90	100.0
2. Level/Magnitude	25	27.8
3. Generality	6	6.7
4. Strength and Level	25	27.8
5. Outcome Expectancy	9	10.0
6. Strength/Generality	4	4.4
7. Strength/Level/General	2	2.2
Area 2: Individuals Sampled		
A. Number of individuals sampled		
1. 50 or fewer	20	22.2
2. 51 to 100	25	27.8
3. 101 to 150	17	18.9
4. 151 to 200	7	7.8
5. 201 to 250	3	3.3
6. 251 to 300	1	1.1
7. 301 to 350	3	3.3
8. 351 or more	10	11.1
9. Not Given	4	4.4

TABLE 4 (Continued)

Characteristic/Information Provided	Frequency	Percentage
B. Type of Individuals Sampled		
1. Elementary school	14	15.6
2. Junior high school	3	3.3
3. High school	1	1.1
4. College	34	37.8
5. Adults	35	38.9
6. Not Given	3	3.3
Area 3: Reliability Evidence		
A. Reliability indices reported		
1. Interrater	1	1.1
2. Test-retest	13	14.4
3. Split-halves	5	5.6
4. Alpha	31	34.4
5. Equivalent-Forms	1	1.1
6. Median Reliability Index		
a) .60 and below	0	0.0 (0.0)*
b) .61 to .70	1	1.1 (2.9)
c) .71 to .80	1	1.1 (2.9)
d) .81 to .90	16	17.8 (45.6)
e) .91 and above	17	18.9 (48.6)
7. *Not reported	55	61.1
Area 4: Validity Evidence		
A. Description of scale development provided	46	51.1
B. Items reviewed by content experts	13	14.4
C. Items piloted/revised	20	22.2
D. Test specifications are given	8	8.9
E. Correlations with other measures reported	67	74.4
F. Factor Analysis used	19	21.1
G. Multitrait-multimethod matrix used	3	3.3
H. Changes over time reported	14	15.6
I. Group differences reported	38	42.2
J. Items provided	28	31.1
K. Microanalysis	4	4.4

* Numbers within parentheses indicate the percentages of "reported" median reliabilities within these ranges.

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